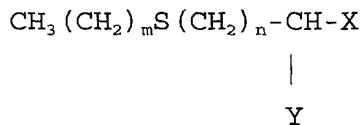


What Is Claimed Is:

1. A method for preventing or treating ototoxicity in a patient exposed to noise for a time and at an intensity sufficient to result in ototoxicity, the method comprising administering to said patient an effective amount of an otoprotective agent comprising a compound containing a methionine or a methionine-like moiety.

2. A method as set forth in claim 1 wherein said otoprotective agent is a compound having the structural formula:



wherein m is an integer from 0 to 3; n is an integer from 1 to 3; X = -OR¹, -OCOR¹, -COOR¹, -CHO, -CH(OR¹)₂, or -CH₂OH; Y = -NR²R³ or -OH; R¹ = H or a substituted or unsubstituted, straight or branched chain alkyl group having 1 to 6 carbon atoms; R² = H or a substituted or unsubstituted, straight or branched chain acyl group having 1 to 6 carbon atoms; and R³ = H or a substituted or unsubstituted, straight or branched chain acyl group having 1 to 6 carbon atoms; or

a pharmaceutically acceptable salt thereof.

3. The method of claim 2, wherein said otoprotective agent is selected from the group consisting of D-methionine, L-methionine, a mixture of D-methionine and L-methionine, methioninol, hydroxy methionine, ethionine, S-adenosyl-L-methionine, a pharmaceutically acceptable salt thereof, and a combination thereof.

4. A method as set forth in claim 3, wherein said otoprotective agent is D-methionine.

5. A method as set forth in claim 3, wherein said otoprotective agent is L-methionine.

6. A method as set forth in claim 1, wherein said otoprotective agent is administered prior to said noise exposure.

7. A method as set forth in claim 1, wherein said otoprotective agent is administered simultaneously with said noise exposure.

8. A method as set forth in claim 1, wherein said otoprotective agent is administered subsequently to said noise exposure.

9. A method as set forth in claim 1, wherein said effective amount of said otoprotective agent is administered to said patient in a time period ranging from about 336 hours before to about 336 hours after said exposure to
5 noise.

10. A method as set forth in claim 9, wherein said effective amount of said otoprotective agent is administered to said patient in a time period ranging from about 48 hours before to about 48 hours after said exposure to noise.

11. A method as set forth in claim 1, wherein said otoprotective agent is administered orally, parenterally, or topically to the round window membrane.

5

12. A method as set forth in claim 11, wherein the administration of said effective amount of said otoprotective agent results in a blood serum level equivalent to that achieved by parenteral administration in the range of from about 1.0 mg/kg body weight to about 600 mg/kg body weight.

13. A method as set forth in claim 11, wherein the administration of said effective amount of said otoprotective agent results in a blood serum level equivalent to that achieved by parenteral administration in the range of from about 5 mg/kg body weight to about 500 mg/kg body weight.

14. A method as set forth in claim 11, wherein the administration of said effective amount of said otoprotective agent results in a blood serum level equivalent to that achieved by parenteral administration in the range of from about 10 mg/kg body weight to about 400 mg/kg body weight.

15. A method as set forth in claim 1, further comprising administering to said patient a supplemental amount of said otoprotective agent after the administration of said effective amount.

16. A method as set forth in claim 15, wherein said supplemental amount of said otoprotective agent is administered orally, parenterally, or topically to the round window membrane of said patient.

17. A method as set forth in claim 16, wherein the administration of said supplemental amount of said otoprotective agent is sufficient to maintain an effective

5 blood serum level of the otoprotective agent in said patient for a period of from one to fourteen days after the administration of said effective amount.

5

18. A method as set forth in claim 17, wherein the administration of said supplemental amount of said otoprotective agent is sufficient to maintain a blood serum level of otoprotective agent within said patient of at least about 10% of the blood serum level achieved by administration of the effective amount of said otoprotective agent.

19. A method as set forth in claim 17, wherein the administration of said supplemental amount of said otoprotective agent is sufficient to maintain a blood serum level of otoprotective agent within said patient of from about 20% to about 70% of the blood serum level achieved by administration of the effective amount of said otoprotective agent.

5

20. A method for preventing or treating ototoxicity in a patient exposed to noise for a time and at an intensity sufficient to result in ototoxicity, comprising administering to said patient an anti-ototoxic effective amount of an otoprotective agent comprising methionine.

5

21. A method as set forth in claim 20 wherein said otoprotective agent is selected from the group consisting of D-methionine, L-methionine, D,L-methionine, a pharmaceutically acceptable salt thereof and a combination thereof.

22. A method as set forth in claim 21, wherein said otoprotective agent is D-methionine.

SEARCHED
INDEXED
SERIALIZED
FILED
APR 19 1979
U.S. PATENT OFFICE
CARRIAGE

23. A method as set forth in claim 21, wherein said otoprotective agent is L-methionine.

24. A method as set forth in claim 20, wherein said otoprotective agent is administered prior to said noise exposure.

25. A method as set forth in claim 20, wherein said otoprotective agent is administered simultaneously with said noise exposure.

26. A method as set forth in claim 20, wherein said otoprotective agent is administered subsequently to said noise exposure.

27. A method as set forth in claim 20, wherein said effective amount of said otoprotective agent is administered to said patient in a time period ranging from about 336 hours before to about 336 hours after said exposure to
5 noise.

28. A method as set forth in claim 27, wherein said effective amount of said otoprotective agent is administered to said patient in a time period ranging from about 48 hours before to about 48 hours after said exposure to noise.

29. A method as set forth in claim 20, wherein said otoprotective agent is administered orally, parenterally, or topically to the round window membrane.

30. A method as set forth in claim 29, wherein the administration of said effective amount of said otoprotective agent results in a blood serum level equivalent to that achieved by parenteral administration in
5

the range of from about 1 mg/kg body weight to about 600 mg/kg body weight.

31. A method as set forth in claim 29, wherein the administration of said effective amount of said otoprotective agent results in a blood serum level equivalent to that achieved by parenteral administration in the range of from about 5 mg/kg body weight to about 500 mg/kg body weight.

32. A method as set forth in claim 29, wherein the administration of said effective amount of said otoprotective agent results in a blood serum level equivalent to that achieved by parenteral administration in the range of from about 10 mg/kg body weight to about 400 mg/kg body weight.

33. A method as set forth in claim 20, further comprising administering to said patient a supplemental amount of said otoprotective agent after the administration of said effective amount.

34. A method as set forth in claim 33, wherein said supplemental amount of said otoprotective agent is administered orally, parenterally, or topically to the round window membrane of said patient.

35. A method as set forth in claim 34, wherein the administration of said supplemental amount of said otoprotective agent is sufficient to maintain an effective blood serum level of the otoprotective agent in said patient for a period of from one to fourteen days after the administration of said effective amount.

5

36. A method as set forth in claim 34, wherein the administration of said supplemental amount of said otoprotective agent is sufficient to maintain a blood serum level of otoprotective agent within said patient of at least about 10% of the blood serum level achieved by administration of the effective amount of said otoprotective agent.

37. A method as set forth in claim 34, wherein the administration of said supplemental amount of said otoprotective agent is sufficient to maintain a blood serum level of otoprotective agent within said patient of from about 20% to about 70% of the blood serum level achieved by administration of the effective amount of said otoprotective agent.

5

38. A method for preventing or treating ototoxicity in a patient exposed to noise for a time and at an intensity sufficient to result in ototoxicity, the method comprising administering to said patient an effective amount of an otoprotective agent comprising D-methionine, L-methionine, D,L-methionine, a combination thereof or a pharmaceutically acceptable salt thereof, the administration of said effective amount of said otoprotective agent resulting in a blood serum level equivalent to that achieved by parenteral administration in the range of from about 10 mg/kg body weight to about 400 mg/kg body weight.

10

39. A method as set forth in claim 38, wherein said otoprotective agent is administered parenterally, orally or topically to the round window membrane of said patient.

40. A method as set forth in claim 38, wherein said effective amount of said otoprotective agent is administered

to said patient in a time period ranging from about 336 hours before to about 336 hours after said exposure to noise.

41. A method as set forth in claim 38, further comprising administering to said patient a supplemental amount of said otoprotective agent after the administration of said effective amount, the administration of said supplemental amount of said otoprotective agent being sufficient to maintain a blood serum level of otoprotective agent within said patient of from about 20% to about 70% of the blood serum level achieved by administration of the effective amount of said otoprotective agent.